

WHAT IS CLAIMED IS:

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1. A method for updating software in a radio terminal device of a mobile communication system, wherein a base station and radio terminal devices are connected mutually through radio communication channels, comprising the steps of:

10 notifying version information on a control-software presently involved in operations of said radio terminal device to a software-supply device connected to a network by said radio terminal device;

15 determining a necessity of updating said control-software by comparing the version information received from said radio terminal device with latest version information stored in and managed by said software-supply device; and

20 downloading new control-software that is appropriate to update the version of said control-software to said radio terminal device by said software-supply device if updating of said control-software is needed.

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2. The method as claimed in claim 1, wherein the step of notifying version information by said radio terminal device notifies the version information of said control-software involved in operations of said radio terminal device to said software-supply device at regular time intervals.

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3. The method as claimed in claim 1,  
wherein the step of downloading new control-software  
comprises a step of dividing said new control-  
software to be downloaded into blocks having a fixed  
5 size, said blocks being downloaded intermittently.

10 4. A radio terminal device comprising:  
a radio communication unit capable of  
transmitting and receiving digital signals;  
a main memory storing control-software  
presently involved in operations including a radio  
15 communication control of said radio terminal device  
and update-software for updating said control-  
software presently involved;  
a buffer memory; and  
a processing unit that operates in  
20 accordance with said control-software in said main  
memory,  
wherein said processing unit causing  
update-used software downloaded through a radio  
communication channel under a control of said  
25 control-software presently involved to be  
temporarily stored in said buffer memory and updates,  
under a control of said update-software, parts of  
said control-software presently involved with said  
update-used software, so that the processing unit  
30 can operate in accordance with updated control-  
software.

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5. The radio terminal device as claimed  
in claim 4, wherein said buffer memory has a size

that is smaller than that of said control-software and is greater than that of said update-used software.

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6. The radio terminal device as claimed in claim 5, wherein:

10           said control-software is divided into several modules which can be updated individually; and

              said processing unit updates said several modules by repeating download and updating processes  
15 of said modules in order.

20           7. The radio terminal device claimed in claim 5, wherein:

              said update-used software is divided into blocks having a fixed size; and

              said processing unit requests download on  
25 a block basis and stores a necessary numbers of blocks of said update-used software to said buffer memory in order.

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8. The radio terminal device claimed in claim 7, wherein the processing unit manages a transmission order of the blocks and interrupts  
35 downloading of said update-used software if a fixed event occurs while downloading.

9. The radio terminal device claimed in claim 4, wherein a part storing said control-software in said main memory and said buffer memory include flash ROMs.

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10. A software-supply device comprising:  
10 a communication interface unit capable of transmitting and receiving digital signals connected to network;

a memory storing every version of control-software involved in operations of a radio terminal  
15 device and version information on said control-software; and

a communication control unit updating and managing contents of said memory, said communication control unit being capable of communication with any  
20 radio terminal device through a communication interface unit.

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11. The software-supply device claimed in claim 10, wherein:

said communication control unit determines whether said control-software used in said radio  
30 terminal device is needed to be updated by comparing the version information received from said radio terminal device and a latest one of the version information in said memory; and

said communication control unit selects  
35 and downloads new control-software appropriate to update the version of the control-software used in said radio terminal device when it is determined

that updating of said control-software is needed.